Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Period: \_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_

**Chemical Bonding Practice Test**

**Part 1: Properties of Ionic, Covalent, and Metallic Bonds**

Write the number of each property in the appropriate box.

1. Bond between a metal and a metal
2. Bond between a metal and a nonmetal
3. Bond between free-floating valence electrons and positively-charged metal ions
4. Brittle
5. Crystalline
6. Ductile
7. Electrons are shared
8. Electrons are transferred from the metal to the nonmetal
9. Malleable
10. Name using prefixes
11. Soluble in water

|  |  |  |
| --- | --- | --- |
| Covalent Bonds | Ionic Bonds | Metallic Bonds |
|  |  |  |

**Part 2: Covalent Compounds**

Name the following covalent compounds.

1. P2Br5 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. NH3 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. Se2Cl7 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. N2O3 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
5. CCl4 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Write the formulas for the following covalent compounds.

1. Sulfur trioxide \_\_\_\_\_\_\_\_\_\_\_\_
2. Diphosphorous pentoxide \_\_\_\_\_\_\_\_\_\_\_\_
3. Dihydrogen monoxide \_\_\_\_\_\_\_\_\_\_\_\_
4. Sulfur hexafluoride \_\_\_\_\_\_\_\_\_\_\_\_
5. Heptahydrogen tetrafluoride \_\_\_\_\_\_\_\_\_\_\_\_
6. Octanitrogen trioxide \_\_\_\_\_\_\_\_\_\_\_\_

**Part 3: Simple Ionic Compounds**

Name the following ionic compounds.

1. BaCl2 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. NaF \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. Rb3N \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. Al2S3 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Write the formulas for the following ionic compounds.

1. Magnesium oxide \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. Aluminum iodide \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. Barium oxide \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. Sodium nitride \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Part 4: Ionic Compounds containing Transition Metals**

Write the formulas for the following ionic compounds containing transition metals.

1. Iron(II) oxide \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. Chromium(III) sulfide \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. Copper(II) iodide \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. Titanium(IV) oxide \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
5. Gold(I) iodide \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
6. Lead(IV) sulfide \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Part 5: Ionic Compounds containing Polyatomic Ions**

Name the following ionic compounds containing polyatomic ions.

1. AgNO3 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. K2SO4 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. (NH4)2O \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. CaCO3 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Write the formulas for the following ionic compounds containing polyatomic ions.

1. Sodium nitrate \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. Lithium phosphate \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. Ammonium nitride \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. Calcium nitrate \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
5. Magnesium phosphate \_\_\_\_\_\_\_\_\_\_\_\_
6. Gold(III) acetate \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Part 6: Mixed Review**

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Name** | **Special Notes**  *Ionic, Covalent, Roman Numeral, Polyatomic Ion?* | **Formula** |
| 7 |  |  | N2F4 |
| 8 |  |  | TiCl4 |
| 9 | sodium chloride |  |  |
| 10 |  |  | Al2(SO4)3 |
| 11 | sodium carbonate |  |  |
| 12 | tetrasulfur tetranitride |  |  |
| 13 |  |  | PtO |
| 14 |  |  | Cr2O3 |
| 15 |  |  | P2S5 |
| 16 |  |  | FeSO4 |

**Part 7: Lewis Dot Diagrams**

For each of the following molecules:

1. Calculate the number of valence electrons
2. Draw the Lewis Dot Diagram.

| **Molecule** | **Valence Electrons** | **Lewis Dot Diagram** |
| --- | --- | --- |
| CBr4 |  |  |
| SiO2 |  |  |
| H2O |  |  |
| PCl3 |  |  |